1887.

14TH ANNUAL CATALOGUE.

WINNIE

Machine Works,

Wabash Ave. and Congress Street,

CHICAGO, ILL.

BARREL HOOP MACHINERY,

Cooperage Goods and Cooperage Stock,

STAVE AND HEADING MACHINERY,

Notice Special Low Prices of Circular Saws, Leather and Rubber Belting. Shafting, Hangers, Pulleys, Boxes, Etc.

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Shingle and Planing-Mill Machinery,
Sash, Door and Blind Machinery,
Pail, Tub and Handle Machinery.
Saw-Mills, Engines and Boilers,
Shafting, Pulleys, Saws and Belting,
Coopers' Tools and Coopers' Stock.

Examine this Catalogue closely and keep it for future reference. It gives valuable information concerning the manufacture of Coiled BARREL HOOPS, and contains large list of different kinds WOOD WORKING MACHINERY.

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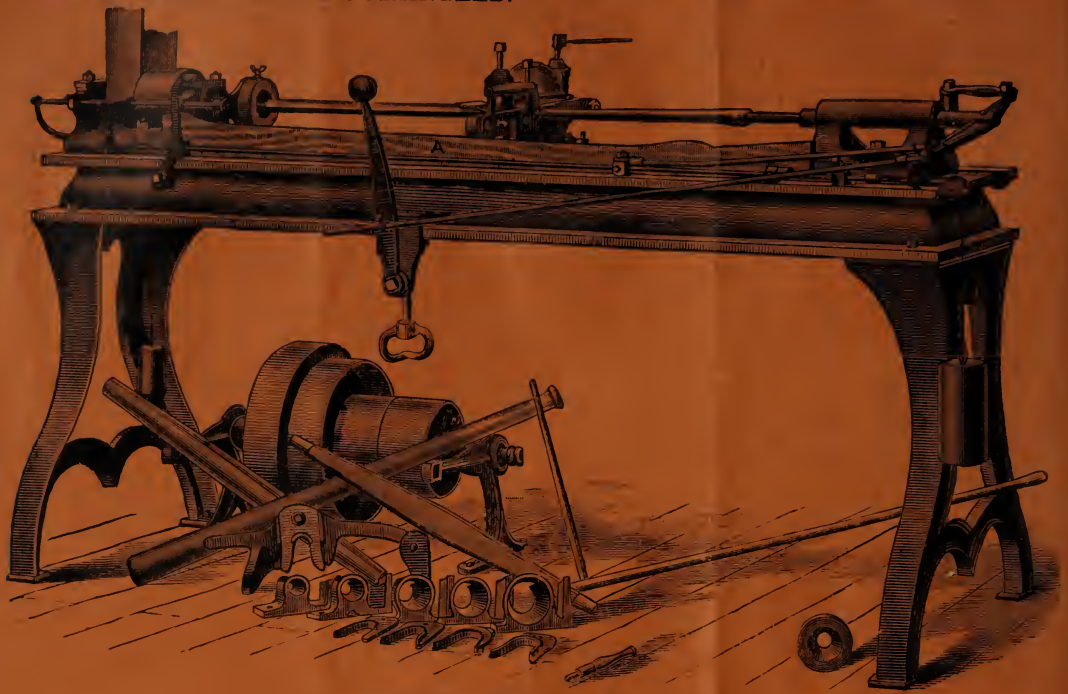

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TO THE PUBLIC.

We take pleasure in presenting to you our **14th ANNUAL CATALOGUE,** which displays to you a line of Machinery not shown by any other house in the country, and in the making up of this catalogue we have taken pains to have the finest cuts and the best of paper and press work, that you may see the Machinery Goods about as plainly as if they were in fact before you.

The **BARREL HOOP MACHINERY** is shown you in all its details. The Machinery is thoroughly described, and every part of the work is fully explained. If you read this print closely it will answer all your questions about the business, and what you read are facts you can depend upon. We have tried to make every part and describe all things so plainly, that any boy 15 years old can well understand how the work is done. We speak from long experience, as it has been 15 years since we first began manufacturing and operating Coiled Hoop Machinery. The result is that now we can sell you at very low price the best Coiled Hoop Machinery ever used; and there are thousands of coopers and barrel manufacturers all over the entire country who would gladly testify that the hoops manufactured by our machinery are the best hoops in every respect now put upon barrels or kegs. They are being used in every state of the United States and also throughout Canada, and large quantities are being exported to foreign countries. These hoops are as staple an article in any man's hands as is lumber, nails, flour or sugar. They are wanted in car-load lots at different places in all the states every day the year round. They are sold for quick cash pay, same as every other staple article of merchandise. There is going to be a greater demand for our Coiled Barrel and Keg Hoops this present year than ever before known, and we desire to place this Catalogue in the hands of those men who can get the lumber to make hoops of. You must bear in mind it is only in a small part of each state where the timber can be had for these hoops. Some states have no timber at all for hoops, consequently they must *always* buy their hoops from other localities. This fact makes it the more fortunate for those localities which have the hoop timber.

Every indication points to a coming season of active and profitable business. The country's crops promise to be good, values will be good, and every man should feel encouraged with the business outlook. More consumption of everything is going on each year, because of the rapid and enormous growth of the population. Each line of business and manufacture must be enlarged to meet the new and increasing demands for all products, and those men who are active and energetic can make this a busy and profitable year.

THE KINDS OF TIMBER.

There are several kinds of timber which will make coiled barrel hoops. Elm timber is most used because it is a tough-grained wood.

There is Water Elm, Swamp Elm, Red Elm, Slippery Elm, Rock Elm and White Elm. More hoops are made from Water Elm and Swamp Elm than from all other kinds of timber; they are soft, spongy woods which easily make up into hoops.

Rock Elm and White Elm are harder grained, and not as plentiful as soft elms. It is not needful to put as much timber into hard grained hoops to get the necessary strength. Coiled hoops made from Rock Elm, White Elm, White Oak, or any other good Oak Timber, Hickory, Black, White or Sweet Gum and White Ash should be made only about two-thirds as thick and not as wide to give equal strength with hoops made from Water Elm, Swamp Elm, Black Ash, Cypress and such soft woods; for instance, the regular standard size of coiled Soft Elm or Black Ash barrel hoops is 6 or 6½ feet long, 1¼ inches wide, and full ⅜ inches thick on thick edge; of such hoops you can average 3,000 hoops from 1,000 feet mill-run lumber after allowing ten or fifteen per cent waste for shake, knots, etc.

If you make these hoops of the harder woods and 1¼ to 1⅜ inches wide, and 5-16 inch thick, you have an excellent hoop and of equal strength of the standard size from the soft woods, and in consequence you average 3,500 coiled barrel hoops from 1,000 feet of lumber.

A great many localities have only small timber, or a kind of second growth: such kinds of timber are found in several different states, and men inquire if such small timber will make coiled hoops; my reply is, it makes the toughest kind of hoops and is superior for nail keg hoops. With a small saw mill, or with a

bolting saw, you can saw young timber from 4 to 12 inches in diameter into 1¼ or 1⅜ inch stuff, and then run it through the hoop machinery, making the choicest kind of hoops.

Solid knots of small size do not injure the hoops: neither does cross-grained wood as it ordinarily runs injure the strength of coiled hoops. It is the process of sawing the hoops out of green timber, then moderately steaming or boiling the hoops so as to warm up the gummy juice in the wood, then coiling them in round form and having the fibers of the wood cement together and set in that way, which makes the timber stronger after it has been made into hoops and dried, than ever it could be in green and straight condition.

Of course Hickory makes good hoops, but not so desirable as Elm timber, or Oak timber, because Hickory is so hard and stiff to work after it has dried. Hickory hoops are excellent if made quite thin—even thinner than Hard Elm or White Oak hoops. You can make 4,000 barrel hoops out of 1,000 feet of Hickory.

Post Oak, Pin Oak, Mountain Oak, Red Oak and Black Oak make good hoops.

Sweet and Black Gum is used for hoops wherever found. This wood is quite similar to Rock Elm in strength and makes strong, tough hoops.

As before stated, Black and White Ash make good hoops.

Cypress makes good hoops, so does Fir Timber. These two last are only to be found in scattering parts of the country.

Red, White and Black Birch make good hoops.

Beech, Maple, Whitewood, Poplar, Sycamore and Basswood do not make hoops bacause those woods are too brittle to coil into hoops.

Any kind of timber which will bend or coil in a circle, will make hoops. Every man should know in his own good judgment, that all kinds of timber must be steamed or soaked in hot water just before being bent or coiled.

LOG SLABS.

We wish to impress on the mind of every man the fact that hoops made from slabs are among the choicest hoops. Bolt your slabs into 1¼ or 1½ inch stuff, then run those pieces through the hoop sawing machine, and you have the best of hoops sawed out with the grain of the wood. Do not edge your hoop lumber; put your stuff to the hoop saws bark edge first, as all wood next to the bark is excellent for hoops.

Green timber must be used in this work. Never put in any logs that are not green, and do not try to make hoops from logs that have been laying on the ground long enough to become sap-rotton. Logs cut in the winter will retain their green strength until late in the spring, but it is preferable to have the lumber cut green through the warm summer season. It is best to have the logs sawed only about as fast as required to keep the Hoop Machinery in operation, which would be from two to three thousand feet per day, according to the size of hoops you are making.

One Thousand Feet fair quality lumber, board measure, will make **3,000** regular size Coiled Barrel Hoops, **2,500** Tierce Hoops, or fully **6,000** Nail Keg Hoops. This is allowing from ten to twenty per cent waste for some of the lumber not being good, either by shake or knots.

We have here answered plainly and *truthfully* that question which is asked by every one, and please remember what is stated in this print is based on actual facts.

TAKE NOTICE.

Some men think they must necessarily get in all their Hoop logs in winter time to make hoops during the year; this is a great mistake, for it is better to cut the logs nearly every month during the year, for when fresh and green they make better hoops, and the lumber is much nicer to work up. Trucking logs in the warm season, or for two-thirds of the year or more, is now an every day matter with many of our best mills all over the country. A good many firms making coiled hoops are bringing their logs on a haul of from five to ten miles every week during the year. Logs can be cut and put into water and remain there without injury to the timber for a long time.

Let every man properly attend to his hoop business, make his help do their work right, and his product will class as No. 1 every time, and sell quick as made and at highest market price. We have yet to find that man making good hoops who does not market them quick as made.

Never in our experience have we known the demand from all parts of the country for coiled hoops to be as great as it was last year. In fact, not enough could be had to fill orders coming from all directions. This present year now promises to be even greater in its demand. Hoop shipments begin actively in March and continue stronger until close of the year. There are only two dull months for cooperage—January and February.

Every man should understand there are only certain localities where the timber grows to make coiled hoops from. The entire country will *always* be dependent on a very small portion for its supply of hoops, yet few men stop to reflect on that fact.

For the past ten years coiled hoops have been shipped to Milwaukee, Chicago and other surrounding places, to New York, Boston, Baltimore, Philadelphia, Richmond, New Orleans, Mobile, Galveston, Nashville, Louisville, Pittsburgh, Wheeling, St. Louis and hundreds of other points east and west and in the interior states, and to the entire country west to Kansas, Texas, Colorado, Minnesota, Nebraska and on to California. Perhaps this statement will open the eyes of some men who do not know the vast territory which is calling for coiled hoops. Thousands of coopers and barrel-makers throughout the states are using them. *Many large barrel factories use from two to five car-loads of hoops per week in their own shops.* You cannot go into a town in the United States but that you find our coiled hoops on kegs and barrels. Large quantities of them are now being exported to foreign countries. Do not ask for samples, you can see them everywhere on kegs and barrels.

Any man who wishes to manufacture coiled hoops can easily sell them in his own state, as *every state* in the country wants the hoops: that is a fact you can depend upon. This hoop business possesses a great advantage over any other kind of wood work, because it gives you an opportunity to change your money every 60 days at least, as coiled hoops are ready for market as soon as made.

Power to Run the Machinery.

You can use any kind of driving power to operate the hoop machinery. **Six horse power** is enough to run all five of the machines to full capacity. The capacity of each machine is so regulated that each keeps up with the others, the hoops passing quickly from one machine to the next until finished and coiled.

The capacity of the Hoop Machinery is from 7,000 to 10,000 hoops per day, according to size and kind.

You can set the machinery in your mill in any way most convenient for you to operate. One driving shaft 1½ inch diameter and 18 or 20 feet long, and set in 3 shaft boxes, will run all five of the hoop machines,

with proper size pulleys on the shaft to run each machine.

You can place the machines a foot or two apart and under the shaft, or you can place part of the machines one side of the shaft and part the other side, and run them with slanting belts.

A room 16 or 18 feet wide and 20 or 25 feet long, is large enough to operate all the machines.

If you already have mill room to spare, no matter if it be in two or three different parts of your building, you can scatter the hoop machines and do the work as well; for hoops are so light and easy to handle, that a boy can carry a thousand of them 50 or 100 feet away in a few moments.

You can belt the machines from above or below, as suits you best.

SAW MILL MEN

would find it valuable machinery to add to their other mill work. MUCH LUMBER COULD BE MANUFACTURED INTO HOOPS THAT IS WASTED BY BEING RUN INTO SLABS OR OTHERWISE LOST. The profit to the manufacturer is very large, and is double the cost of the hoops in many cases. Owing to the great increasing demand for Coiled Hoops they bring a good price, and always sold for cash. The work is regular the year round.

Stave and Heading Factories, also Shingle and Planing Mill Men

could as easily operate the work; or, power can be rented, so that any man could buy his lumber and profitably engage in the manufacture of hoops.

It does not require skilled help, for any person can run the machines. They are made strong, and are not at all liable to get out of repair.

The Hoop business is a very nice and profitable work to connect with any other kind of business where steam or water power can be obtained. It requires but very little capital to buy the Machinery and operate the work, and there is no business where the manufactured product can be sold more quickly and for ready cash.

PLEASE NOTICE.

Many men will look over this catalogue of our Hoop Machinery, then turn right around and ask a host of questions, which they would have found fully answered had they read closely and with proper attention. Very few machinery manufacturers take the pains to fully illustrate their goods as we do. The engraving cuts are the best, and the descriptive print is full in particulars. We say nothing in this print different from what we would tell every man if he were standing by us.

In any case where information is desired, and not given in this catalogue, then we are glad to give it by letter writing.

We do not know or see one man out of twenty whom we deal with the year round, as our business is done mostly by correspondence. About all men buying our Hoop Machinery have never seen a hoop made until they make them themselves. The work is so easily done, that it is almost always done right from the start. No experienced help is required. Any person can start the machines to their work. If any man desires to see the machines before buying, he can easily come to Chicago, and we will be glad to show them to him.

Our patents are on the machinery. There is no royalty to be paid on the hoops. Any man purchasing our Hoop Machinery, can manufacture and sell his hoops wherever he desires.

The great advantage of the coiled hoop business over almost any other kind of wood work, is this fact: That you do not have to wait to season your stock, as has to be done with staves, heading or lumber. Coopers prefer to use the hoops soon after their manufacture. Coiled hoops are ready for shipment quick as made.

Any party who can get Elm, Oak, Ash, or any other tough lumber, cannot enter a business which requires so little capital, and in which they can turn their money every 6 weeks with such sure profits, as they can in the manufacture of coiled hoops.

Regarding power to run the Hoop Machinery, if you have not already got it, you might rent it cheap about you in some way, as only six horse power is needed to operate the work.

Those men who live in small places, or who have not noticed cooperage business at all, would get their eyes opened to go out into the active part of the country and find there is from **800** to **1,000** car loads of cooperage stock used in the United States **Every Day**, and when they stop to learn the fact that it requires nearly half as many hoops to make a barrel as it does staves, then they may realize the enormous amount of hoops daily required; then add to that statement the fact, that all coopers and shippers prefer our sawed coiled hoops, because they cheapen the cost of barrels or kegs, and at the same time double the strength of all barrels or kegs.

Another thing for you to understand is; That you seldom see any man engaged in a successful business in which he desires any sort of competition. You generally find them close-mouthed about their work, as a prudent man of business almost always is. They do not like to give information about their work. They do not want others to interfere with their interests or profits. A man with a good hoop trade is not very talkative in reply to questions.

There is a certain class of men who always fear an over production of everything; they fear the bottom would fall out were they to engage in any special work. Such men ought not to try to do anything for themselves; they should stick to some day going wages for other men of pluck and enterprise. Occasionally a man may be found who thinks the price of hoops would fall were he to engage in the work. There is but one answer to such inexperienced and timid people, and that is they might as well expect lumber and flour to go down to half price all over the country were they to build a saw mill or flouring mill; or that wheat would go to fifty cents a bushel were they to put in a hundred acres of wheat. Such men do not know that every sensible cooper prefers the coiled hoop to any other kind of hoop the world over, for *it is a fact* undisputed that all men who have used coiled hoops like them and continue to want them. It is only those men who do not know anything about coiled hoops who say anything against them, and such old fogies should not be noticed, as their prejudices are the result of ignorance of the work.

The Different Sizes of Coiled Hoops and Their Values.

If you wish to find out the value of hoops in any market *try to buy some*, as that is the only right and proper way to learn the value of any article. A consumer of hoops may want a quantity of them badly; but let a manufacturer of hoops approach him and offer hoops for sale. The consumer will in nine cases

out of ten carry the idea he has plenty of stock, and makes an offer from one to two dollars per 1,000 below the real market value of the hoops, hoping by so doing to buy the car-load twenty-five or fifty dollars below its actual value. If any man is stupid enough to sell his stock in that way, then let him suffer for it. As a general thing the purchasers of *everything* try to buy just as cheap as money will do it.

Coiled Barrel Hoops are usually 3/8 inch thick on the thick edge and 3-16 inch on thin edge. They are 1¼ to 1½ inches wide, and usually 6 or 6½ feet long. The 6½ ft. hoop is the regular standard size everywhere, and always wanted, and you should always have them on hand. You can put 40,000 of these hoops in a good sized freight car—some cars hold 45,000 to 50,000 hoops. Always load a car full as can be, as 1,000 hoops, fairly dried, weigh only about 500 to 600 pounds, and it is almost impossible to overload a car. The freight is no more on full car than on a car two-thirds full; therefore, to reduce freight expense in shipping hoops, *load the car full.* These hoops have a value of $7.50 to $8.00 per 1,000 in nearly all the cities and towns between New York and the Mississippi River, and in the states north of the Ohio River. From that value the freight expenses must be deducted, which averages from 50 cents to 75 cents per 1,000 on shipments of reasonable distance, and sometimes $1.00 per 1,000 on shipments of long distance of a few hundred miles. This leaves the value of the hoops at about $7.00 per thousand on board car at place of manufacture. The consumption of coiled hoops is now so great in each state, that any manufacturer can sell his hoops to buyers in his own state and near-by points of adjoining states, and we positively agree to furnish to the purchasers of our Hoop Machinery the address of the barrel manufacturers and coopers and hoop-buyers of their own state and any one or two states adjoining, for you to select your customers from. Some of these lists are very large, for instance, New York and Pennsylvania have fully 500 hoop buyers in each; Ohio, Michigan, Indiana, Illinois, Wisconsin, Missouri, 200 to 400 hoop-buyers each; and other states number in their proportion. This list of No. 1 hoop-buyers is very reliable, and it fully guarantees to any hoop manufacturer the marketing of his stock fast as made; and this taken in connection with our guarantee on our Hoop Machinery is all that any reasonable man could ask for.

Coiled Hoops bring higher prices in the Southern and Western States, as those states have but little timber, and they need to buy most all their stock from other parts, where the hoop timber can be obtained, and because of additional freight expense, the hoops cost them more.

Coiled Nail Keg Hoops are 4 feet 4 inches long, and 1¼ to 1⅜ inches wide, full ¼ or 5-16 inch thick on thick edge, and 3-16 inch on thin edge. 70,000 or more are put in a good sized freight car. Keg Hoops have a value of $3.50 to $4.00 per thousand at the different nail manufacturers in Pennsylvania, Ohio, Indiana, Illinois and other states, and are wanted by the hundreds of carloads this year.

Coiled Tierce Hoops bring $10.00 per thousand, car lots or less, delivered in Chicago and other places. They are same width and thickness as Coiled Barrel Hoops, and 8 or 8½ feet long. Tierces are large size, and are used for shipping Shoulders, Hams, Salted Meats, Glue, Fruits, Crockery, Rice, Starch, Glassware, and many other purposes.

Sugar Barrels are larger than the usual size of barrels, and for that reason Hoops for Sugar Barrels need be 6 feet 9 inches long, but same width as the 6 foot Hoop.

Tub Hoops are made of various lengths and still thinner than Keg Hoops.

Butter-Tub, Firkin and Half Barrel Hoops vary from $5.00 to $7.00 per thousand in Chicago, according to size and length.

Hogshead Hoops, 12 to 15 feet long, 2 and 2½ inches wide, $20.00 to $35.00 per thousand.

Tobacco Hogshead Hoops, made from Oak, good Elm, Hickory, or other good timber, 2, 2½ and 2¾ inches wide, about ½ inch thick, are very desirable hoops to make, because they sell for a good price. They are shipped straight and in bundles of 25 or 50.

You need not be too particular about the length of any kind of hoops; should your hoops vary an inch or two in length for any size, it would not be any detriment to their sale, provided there were not too many short ones.

The car load freight rates on Coiled Barrel or Keg Hoops to any part of the country is the same as is charged for carrying lumber, which is about the lowest rate of transportation for any class of material.

All coopers and shippers say that in using Coiled Hoops, it reduces the cost of barrels and kegs from 3 to 6 cents each.

It costs only half as much to set up and hoop a barrel with Coiled Hoops as it does with racked or shaved pole hoops. Coopers easily make twice as many barrels per day. There is no shaving of hoops, no locking to be done, and they do away with the many hindrances of a cooper shop.

Go into any Grocery or Hardware store and you will see our Coiled Hoops on barrels and nail kegs.

Coiled Hoops are much stronger than others, because there is no cutting away one-half of each end of the hoop to lock the ends together as must be done with the common hoop. FOUR *of our Coiled Hoops will make a stronger barrel than* TEN *of the ordinary locked hoops.*

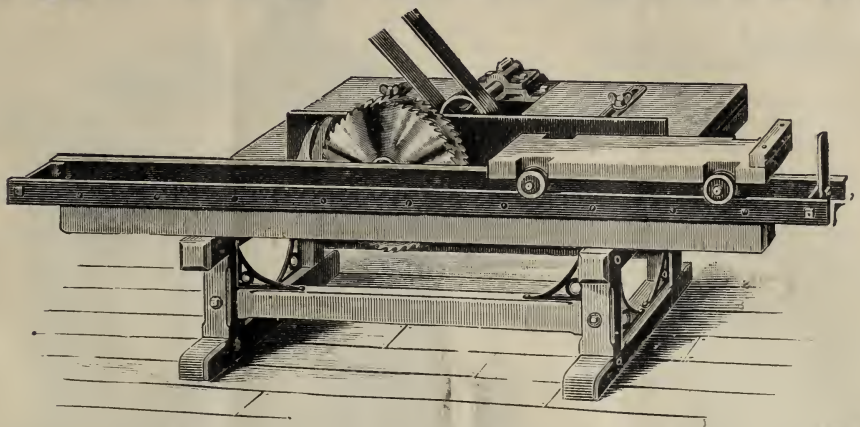
Coiled Hoops will stand much more driving than any racked or pole hoops. If the grain crosses a little in the length of the hoop it does not affect the strength of the hoop at all, in the way we manufacture it. *Coiled Hoops never break or come apart* where they are nailed to fasten the ends together, and that is always a weak place in ALL locked hoops.

In many cities there are large coopers who make two, three, four, five and six thousand barrels a day, and who use from two to five car loads Coiled Hoops per week. Any small cooper doubting the usefulness of Coiled Hoops had better go and examine large barrel factories, where he can get his eyes opened.

SPECIAL NOTICE.

We will sell your hoops in full car-load lots and at their best market price, for a commission of $10 per car, and remit the cash in the usual 30 days, as hoops are always sold for 30-day cash. We wish the hoop manufacturer to write us about one week ahead of time of shipment, so we can arrange placing the hoops to the best advantage and give directions to the shipper where and to whom the hoops are to be shipped. If you are situated to ship by lake or river boat you can ship in large or small quantities, as is most convenient, the hoops to be tied in bundles as shown in this circular. We will gladly sell for you car load hoops every ten days or two weeks throughout the year.

TWO-SAW HOOP BOLTER.



THIS machine saws the hoop-lumber into bars or strips of the right thickness, which are afterward divided to make two hoops from each strip. The board, or plank, is laid on the machine table shown in above cut, and by light hand feed is run up to the saws, and two strips are sawn off at one feed, as shown in annexed cut, these two strips making four hoops when finished.

The body of this machine frame is about three feet wide—length of carriage track about 14 feet. The table is about 6 feet long, attached to strong iron axles, and is run very easily in straight line by means of grooved wheels riding on bevel edge iron track ways. Just back of the table and saws there is an adjustable guide, which can be moved up close to the saws for the purpose of sawing stuff as thin as desired, or the guide can be moved away any distance desired to saw thick or wide stuff; this guide is fastened to place by thumb screws, as shown in cut. 10-inch saws are generally used, although 12-inch saws are used for stuff two or more inches thick. There are three collars of different thickness to go between the saws. The operator can put on the collar needed for the thickness or width of stuff he wishes to saw.

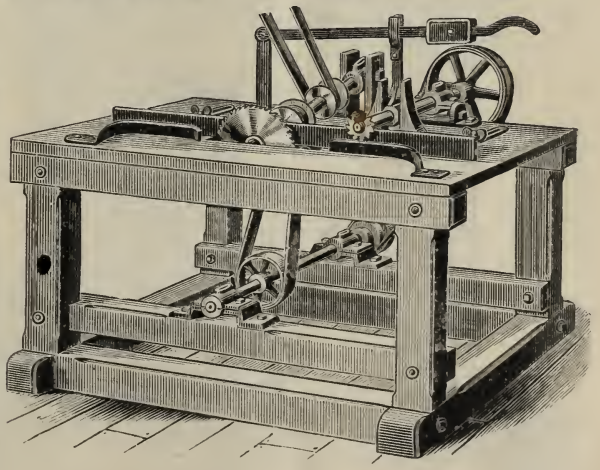
This is a very convenient machine for any mill. It makes a splendid LATH MILL, and for getting out BROOM, HOE, RAKE or FORK HANDLE material, or different kinds of FENCE PICKETS, TRUNK SLATS, BED SLATS, BASKET stuff and articles of that kind this machine stands unequalled.

This machine will saw from 5,000 to 15,000 strips per day, according to size and kind. The table is very light and with light hand pressure moves rapidly back and forth by the saws. Additional collars can be fitted between the saws to run them ⅛, ¼, ⅜ or ½ inch apart. The machine belts from above or below. The pulley on the saw mandrel is 5-inch face and 5-inch diameter, and can be run any speed you desire.

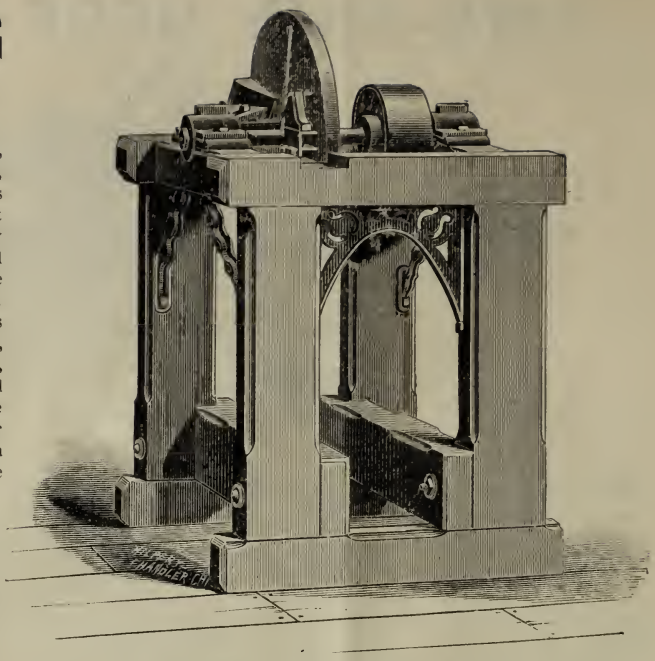
HOOP RE-SAWING MACHINE.

THE hand operating this machine takes the hoop bars or strips from the Bolting Machine and runs them through this machine, which saws them diagonally in two lengthwise, as here shown, each bar making two hoops.

As you can see by the cut, the saw is run on an incline. The saw arbor is run in swivel boxes. The box holding the arbor at opposite end of the saw can be raised up to incline the arbor and saw to cut at any bevel desired. The arbor can be lowered to run on a level also, and re-saw any material in square shape. The arbor is firmly held in place at any incline, by strong bolt work, and it can be raised or lowered and adjusted to place in a moment's time and while in motion. The machine is fitted with 10-inch saw. There is a guide just back of the saw adjustable close to the saw or away any distance desired, and fastened with thumb-screws; this guide, in connection with the springs in front, keeps the bars in proper course while being divided by the saw. The bars are fed to the saw by a small steel ratchet feed, which takes its motion from a Cone Pulley on end of Counter Shaft below; this Counter Shaft is turned by belt, run over a small flange pulley on saw arbor, as shown in cut. The Driving Pulley on the Arbor is also a flanged pulley, about 4½-inch face and 4½-inch diameter, with flanges on both edges about an inch high, which securely holds the belt to place when the Arbor is run on an incline. The Ratchet Feed is moderately weighted from above, and can be instantly stopped at any moment of the work to release the stuff from the saw, by raising it with the hand lever as shown in the upper part of the cut. The feed can be regulated at 40, 60 or 80 feet per minute, as the operator may wish; and as shown, the speed of the feed is according to the speed of the saw, which may be turned two, three or four thousand revolutions per minute. This machine is about three feet wide and four feet long. It can be belted from above or below, and is shipped complete with saw and both counter-shaft belts.



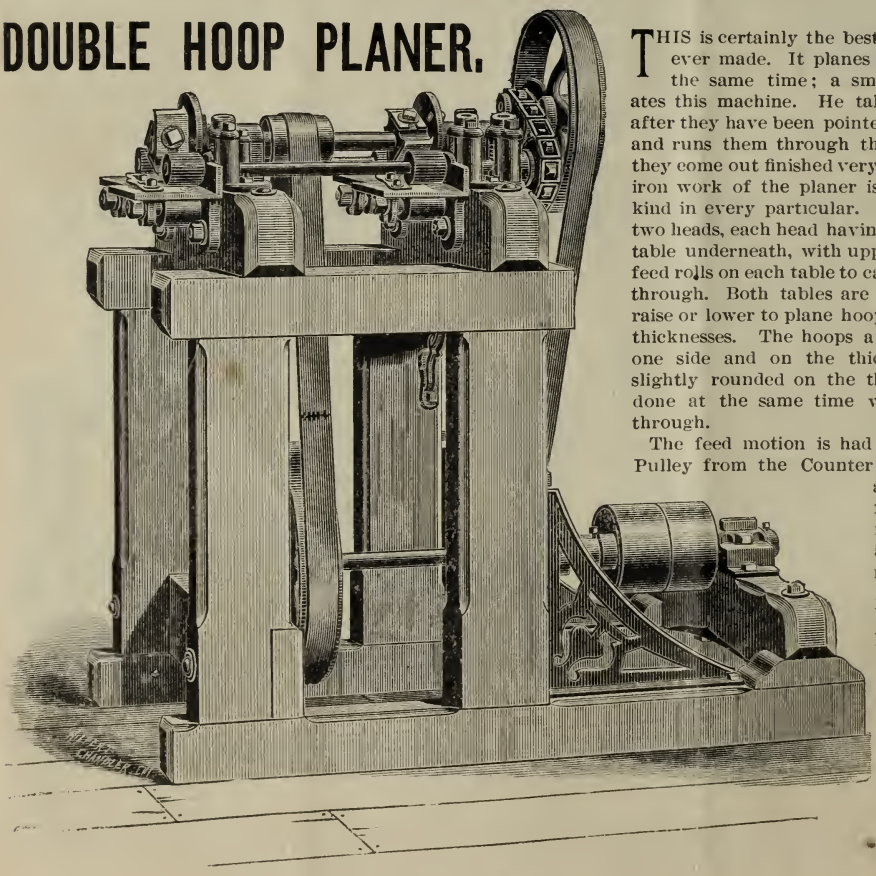
HOOP POINTING
AND SCARFING MACHINE.



THIS is a solid iron WHEEL JOINTER, about twenty inches in diameter, fitted with three 6½-inch knives, 3 inches wide. The body of the frame is about 2½ feet wide and 3 feet long. The Pulley on Jointer Shaft is 8 inch diameter and 3 inch face, and should turn about five or six hundred revolutions per minute.

The boy operating this machine takes the hoops from the Re-Sawing Machine, and putting one end in the upper slide, the knives scarf or thin out, that end about six inches back; then put the other end of the hoop in the lower slides, the knives will cut the bevel on both edges, which properly points the hoop. The work is quickly done, the hoops being trimmed fast as re-sawed, as the knives do their cutting on each part in a second of time. The pointing and lapping is very smoothly done, as the slides are so set that *the knives cut toward the end of the hoop*, when finishing up both ends of the hoops.

DOUBLE HOOP PLANER.



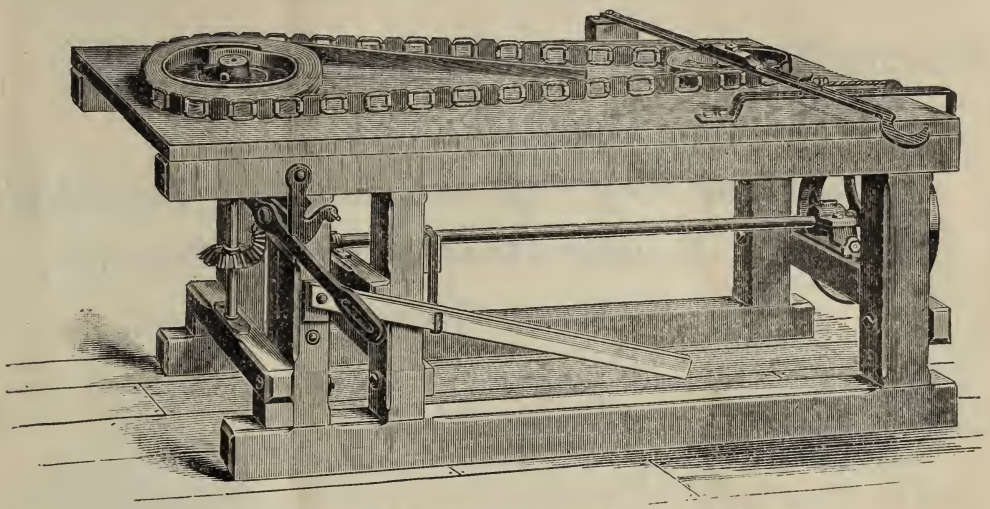
THIS is certainly the best Hoop Planer ever made. It planes two hoops at the same time; a small boy operates this machine. He takes the hoops after they have been pointed and scarfed and runs them through the Planer, and they come out finished very smooth. The iron work of the planer is of the finest kind in every particular. The arbor has two heads, each head having its own iron table underneath, with upper and under feed rolls on each table to carry the hoops through. Both tables are adjustable to raise or lower to plane hoops of different thicknesses. The hoops are dressed on one side and on the thick edge, also slightly rounded on the thick edge—all done at the same time with one feed through.

The feed motion is had from a Cone Pulley from the Counter Shaft below, and each table feed may be regulated to 40 50 or 60 ft. per minute, therefore, if you belt for 50 feet per minute you are planing at rate of 100 feet per min. steady work. If you wish you can finish your hoops on this planer as smoothly as it is possible

to plane any kind of wood material. The upper feed rolls are regulated by coil spring pressure. Between the upper feed rolls on both tables are spring pressure bars to hold hoops in place while going through.

The Counter Shaft tight and loose drive pulleys are 6-inch diameter and 4-inch face. They should turn 800 or 1,000 revolutions per minute—and that motion would turn the Planer Heads from 4,000 to 5,000 turns per minute. The Cone Pulley on Counter Shaft, which feed-belt runs on, cannot be seen in cut as it is hidden by the frame work of the machine.

This machine is about 2½ feet wide and 4 feet long. The Planer Heads are three cornered, or triangle shape, attached to round side flange. Each head has three large knives and 3 flange knives, making 12 knives to each planer, and the machine is shipped complete with all knives and the two counter shaft belts as shown in cut.



HOOP COILING MACHINE.

THE person coiling hoops stands in front of the machine (front side as seen in cut) and after taking a handful of hoops from the steam box or boiling vat, places them in the Coiler one after another, until ten hoops are wound up in the coil.

The Coiling Machine is about 2½ feet wide and about 7 long. The Drive Pulley is at right hand end of the machine, and is 3 inch face and 16 inch diameter, and should turn only about 60 revolutions per minute; its shaft runs in a tilting box to permit the small pinion wheel on left end to raise or lower into the larger gear wheel on perpendicular shaft. When the operator is ready to put up coil hoops he puts his foot on the foot lever in front; the gears come together, and the Coiling Drum, which is fastened to top of the up and down shaft, turns around sufficiently fast to wind up the hoops as rapidly as they can be put in. The Drum is 10 inches in diameter and its rim is 2 inches high. A flat chain made expressly for this work passes around the Drum and out around a loose pulley at the other end of the machine, this loose pulley being held to place by revolving around an iron pin attached to the hand lever, shown as passing across the right hand end of the machine.

The cut represents a coil of hoops being wound up. The last hoop just going in to circle around the outside of the coil as you see it between the two lines of chain. When the last hoop is wound around then take your foot off the lever in front, the gears separate, and the Coil Drum instantly stops turning; then drive one shingle nail through the last end of the last hoop into the three or four hoops under it, which keeps the hoops tight together after coil is taken off the Drum. Of course the chain takes its motion from the turn of the Drum, no matter whether it be slow or fast. The chain is kept tight around the coil by means of a small weight attached to the loose pulley lever at the other end of the machine, and which is suspended over the end of the machine, by cord running over a roller as shown in cut. This weight cannot be seen in the cut as it hangs behind the framework. After nailing the coil the chain is loosened by drawing the loose pulley hand lever toward you two or three inches and it is held there by a catch-pin; then with the left hand raise up the clutch lever shown at the end of the machine (to the left) and that movement drops the Drum down about two inches, or just level with top surface of the machine and from within the coil of hoops. This frees the coil entirely; you throw it off out of the way; the levers go back to place; the chain is again tight around the Drum; you get another handful of hoops, put your foot on the foot lever and the Drum and Chain again move round, winding up another coil of hoops as fast as you can put them in one after the other.

Workmen about the mill like to operate the Coiler as it is a nice machine to run, and any boy can do the work after being with the machine a half-hour. The movements are all easy and quick done.

Coiling hands can easily coil TEN THOUSAND HOOPS PER DAY.

This process of Coiling is the best ever known. The hoops are bound tightly and the revolving chain on the outside holds them firmly to place, and prevents any breaking or checking while being wound up.

All hoops are coiled with the thick edge on under side of coil when being wound up; the thin edges, of course being on the other side of the coil. The coiling hand laps the hoops a foot or more in putting them into the coil—that is, first end of each hoop is lapped a foot or more *under* the last end of previous hoop winding up. By so doing the coil is made round and smooth.

As nail keg hoops are rather short to reach all around the coil, the outside ends of two or three keg hoops are nailed to hold the coil together.

The top surface of the Coiling Machine is covered with very heavy sheet-iron allowing every part to work smoothly.

All hoops except tobacco hogshead hoops *must be coiled* before shipment. It is the process of binding hoops round and into coils and having the wood dry in that shape which gives the coiled hoop its great strength and desirability over all other hoops.

A FULL SET OF

BARREL-HOOP MACHINERY

Consists of the following five different Machines as shown on pages 5, 6 and 7.

Double-Saw Hoop Bolting Machine,

Re-Sawing Hoop Machine,

Hoop Pointing and Scarfing Machine,

Double Hoop Planing Machine,

Hoop Coiling Machine.

They are shipped all complete for immediate work, including the counter-shaft belts as shown in the cuts, all saws and knives. Any mill hand can belt and run them all right from the first start, and without a day's delay.

The Weight of all Five Machines is about 1,700 pounds.

The framework of all the machines is made *very strong* and from best seasoned material, and of 4 by 4 or 4 by 6 timber, finished smooth and nicely painted.

To any purchaser we will give a written guarantee of the capacity of our Hoop Machinery as it is represented in this catalogue, and of its excellent quality of work.

PRICE.

Price full set of our Hoop Machinery is $450, on board car in this city.

TERMS OF PAYMENT.

Our terms of payment are half cash, and the other half secured note for three months.

ALL ORDERS must be accompanied with a remittance of **$100**, which you can send by Bank Draft, Postoffice Money Orders, Express, or by Registered Letter. This payment we require to guarantee good faith on the part of the purchaser and to protect us against irresponsible parties.

When any party sends us their order for a set of our hoop machinery and sends the first payment of $100 with the order, then we feel he means business. The hoop machinery will be shipped in first-class order, and after its arrival to the purchaser he can then pay balance of the cash payment, which would be **$125**, and also make his approved note for **$225**, payable at nearest bank, in three months.

Our factory has been and is now very busy in the manufacture of cooperage and mill machinery. For the past few months machinery has been shipped fast as completed, and we advise all parties wanting hoop machinery to get their order in to us ten days or a couple of weeks ahead of the time they want it shipped, that the machinery may be finished in time and promptly shipped.

If you want any SHAFTING, PULLEYS, BOXES, BELTING or SAWS, please read the special low discounts we offer on page 16.

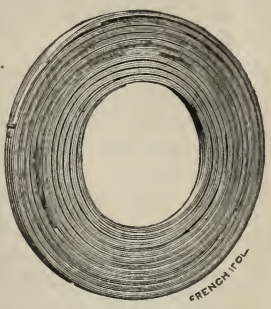
If there is any further information you desire which you do not find after thoroughly reading this catalogue, please write us and your letters shall have attention.

STEAMING OR BOILING THE HOOPS BEFORE COILING.

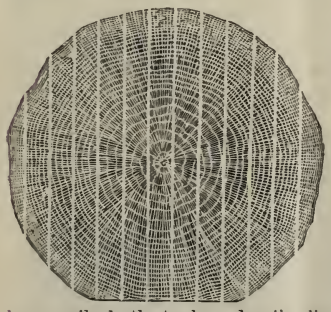
You will understand, of course, that all hoops have to be steamed or boiled in water before being coiled, for the reason they could not be wound up into coils without first being made soft by steaming or boiling.

The annexed cut shows how you should make a box for steaming the hoops before coiling. Any carpenter can make one in a day. Its cost is a mere trifle, and yet it is far better and more convenient than other plans that have been built upon, costing from twenty to fifty dollars each. Make the box of any kind of common boards or plank, the sides 3½ feet high, and 3½ or 4 feet broad on top, tapering down to about 10 inches broad on the bottom, and about 9 feet long, inside measure, so any extra length of hoops may be steamed in it. The cut shows two doors at front end of steam box. The upper one, about a foot square, is used to fill the box with hoops, and the lower slide door to take the hoops out. It is always best to place the steam box just outside the work-room, with the front end set in the wall or side of the room, where the coiling hand can easily raise the slide door (some 6 inches square), and draw out the hoops from the bottom of the box as wanted for coiling. The steam should enter about midway under the box, and as the hoops are drawn out of the box, they constantly settle down from the top, thereby keeping the hoops at the bottom well steamed, and easily drawn out for coiling. Exhaust or wet steam is preferable, as it does not dry out the hoops as dry or direct steam will. Hoops will steam sufficient in 15 or 20 minutes to coil nicely. If you prefer, you can boil your hoops in a vat or tub of hot water before coiling either by heating the water with steam, or by having the bottom of the boiling box made of iron in part, and keeping the water hot by having a fire under that end or part of the box. A boiling box should be made about 3½ feet wide, 9 feet long, and about twenty inches deep, inside measure. Hoops will soak in hot water in a few minutes sufficient for coiling.

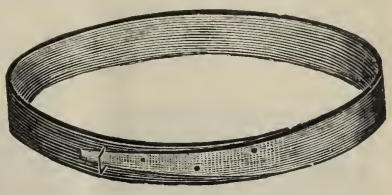
This cut represents a coil of hoops with 10 hoops in the coil. Hoops are coiled with 10-inch circle inside. The outside diameter of coils varies according to size of the hoops—about 15 inches for nail kegs, 20 inches for barrel hoops, and 25 inches for tierce hoops.



The accompanying cut shows how logs should be sawed. Take off a light slab, then cant the log over, slab lightly again, and continue to cut the log into such thicknesses as you may want for the width of the hoop. By so doing you waste very little in slabs. Do not edge the boards, for the outside or sap edge of elm timber is excellent for hoops. Either at the saw-mill or at your hoop-works, cut the lumber into proper lengths for barrel or keg hoops, with a cut-off saw; then the stuff is ready to be put to the HOOP-SAWING MACHINE.



This cut represents a single coiled hoop fastened at the pointed end *by the cooper*, with a small hoop staple driven over the end of the hoop, together with 2 or 3 hoop nails, both staple and nails clinching on inside.



Cost of Manufacturing Coiled Hoops.

One man and four boys operate all five of the machines while at regular work. The hand at the sawing machine which saws the boards or plank into bars for hoops may be worth $1.50 to $2.00 per day. The coiling hand may be worth $1.00 per day. The other three machines are operated by boys worth 50 cents per day each.

The average cost of taking hoop lumber at the mill and making it into coiled barrel hoops, and loading them in car for shipment, is about 75 cents per thousand hoops. As one thousand feet lumber makes fully **3,000** hoops, you add to the cost of this lumber at your mill $2.25, and you can see what 3,000 hoops would cost you loaded in car at your place. As stated elsewhere in this catalogue, these hoops are worth $7.00 per thousand in full car-load lots on the average where they are manufactured, you have a value of $21.00 for the hoops made from that one thousand feet of lumber, board measure. There are many localities where these hoops bring $7.50 and $8.00 per thousand at place of manufacture.

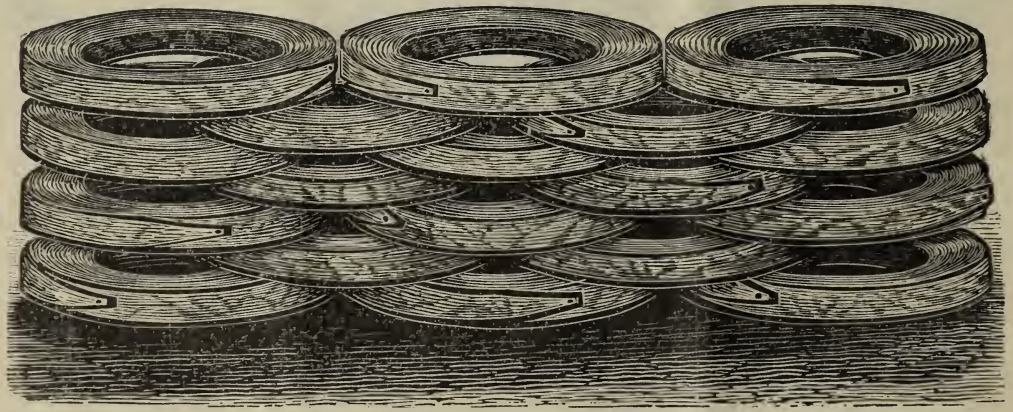
The expense of making nail-keg hoops is not more than 50 cents per thousand, and as a thousand feet lumber makes **6,000** keg-hoops, you can easily estimate the profit to the manufacturer of the hoops.

SPECIAL NOTICE.

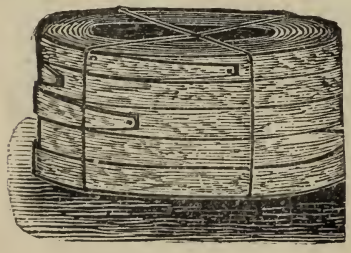
RIGHT here we wish to say a word in connection with CUT *Hoops. We have expended fully twenty thousand dollars and several years' time in building machines to* CUT *Hoops instead of sawing them. We built machines to cut on the veneer plan—of the log turning against a heavy knife; machines with a knife cutting directly down through plank, or with a diagonal stroke, or with a shaving stroke, and found, after much loss of time and money, that no human effort can cut hoops from a board, plank or log, without the bevel of the knife checking one side of every hoop. This is a* FACT, *and if any man disproves it, our answer is that we will give $100 cash for one hundred cut hoops which are not checked, splintered or shattered on one side of the hoop. We will even give $1,000 cash for one thousand cut hoops which are not checked or injured, by any knife-cutting process. Here is a splendid opportunity for those parties to earn money easily who are boasting of any perfect cutting machine that will do such enormous days' works as they tell of. When a person tells you he can furnish you with a cutting machine that will cut sound hoops, it is the result of two conclusions: either he is mistaken in his judgment, or else he is trying to sell you something for money profit which can never succed, and he knows it. Some men like to boast of such great days' works with a cutting machine. None of them do what they claim; and after their hoops are made they are so unsound that they bring only half or three-quarters the price of sawed hoops in the market, and the greater part of the shippers will not use cut hoops at any price. Cutting machinery is very expensive; it is very troublesome to operate, because of the steaming of the timber carefully before cutting, and then the hoops have to be steamed a second time before being coiled, and that* GREATLY INJURES THE MATERIAL. *If anyone tells you the hoops can be coiled without the second steaming, he does not understand his business. Furthermore, the waste in timber in cutting hoops is more than in the sawing of them, because the timber warps, checks, fills with shake, or is otherwise hurt in being steamed or boiled so long before being cut up, and the bevel is so bad that much timber is planed away by the planer. The weakness of cut hoops does not show until they become dry and coopers begin to drive them on the barrel.*

This is plain talk, but we mean every word of it, and speak from experience. No man ever yet cut a shingle that was sound, AND NO MAN CAN CUT A SOUND HOOP, *and the fact is so evident that common sense cannot doubt the truth of it.*

DRYING COILED HOOPS FOR SHIPMENT.



After Hoops are coiled they should be cross-piled under a covered shed. By cross-piling, as shown in above cut, it gives the air a good chance to circulate in among the hoops and quickly dry them out. Drying them for a few days in this way fits them ready for shipment.



For convenience of shipping, it is sometimes desirable to tie the hoops in bundles of 5 coils each, as shown in this cut. It makes them easy to count, for there are 10 hoops in each coil, making 50 hoops to each bundle.

Patent Double Pointed Staples.

For Coopers' Use.

Tub size. Keg Size. Barrel Size.

The best Staple known for Cooper's use to fasten the ends of **Barrel** and **Keg Hoops.**

They require no driving tool; are made from the best **Steel Wire,** flattened with points cut *Sharp*, so there is no difficulty in driving them into any kind of wood. The points are so made they turn and clinch perfectly; there are from **600 to 800** staples to the pound.

Prices.

In small orders of **5** or **10** lbs.....	**15**	cts. per lb.
In lots of	**50**	"	**14**	" "
In "	**100**	"	**12½**	" "

The Tub Size Staples are 20 cts. per lb.

Staples made any size or shape wanted.

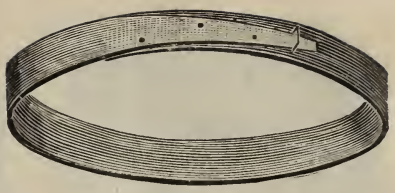
☞**All orders promptly filled to any part of the country. The Cash, either by Draft, Postal Order, or by Express, or by Registered Letter, must accompany all small orders.**

These staples are made from a Square Coppered Wire of very beautiful finish.

Hoops can never break apart at the ends when fastened with these staples and nails.

This cut shows how the points of the Staples clinch on under side of the Hoops.

One Staple only is used to fasten the end of each Hoop.



This cut shows a Coiled Hoop, fastened at the pointed end *by the Cooper*, with a small Hoop Staple driven over the end of the hoop, together with two or three Hoop Nails.

The hoop rests on some suitable piece of iron while nailing the ends together.

The same blow driving in the Staple and Nails clinches them on underside.

For Coopers' Use.

These Cuts Show the Actual Size of the Staples and Nails.

This cut shows the Nails cut the widest way. They are made hot and from best Swedes iron. The nails average about 800 to the pound, and clinch perfectly with one stroke of the hammer. They are made with a very small shank so they will not split the ends of the hoop in driving.

PRICE OF NAILS.—10 cents per pound in small quantities; keg lots of 100 pounds each at less price.

SWING SAWS.

This cut represents our new Iron Frame Swing Saw, which, at a glance, shows to be very substantial. The upper half of the saw is protected with an iron shield on the edge and side. The iron frame is made unusually strong, and with heavy counter-shaft, pulleys and hangers, as shown in cut. Price. 7-foot Swing Saw, complete, with 16-inch Saw and Counter-Shaft, as shown in cut, **$50.00.**

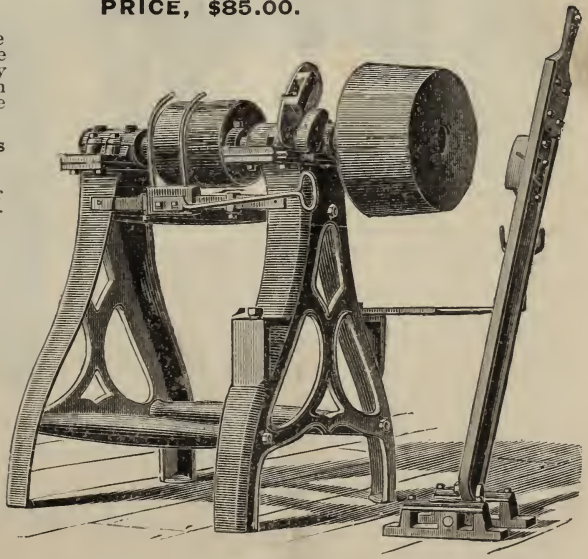
Power Chamfer, Crozing & Howeling Machine for Butter Tubs.

PRICE, $85.00.

This machine is made adjustable for any size of Butter Tubs. Any size Tub Chucks can be screwed on the Spindle.

Capacity, 800 Tubs per day.

Send for Circular giving further particulars.



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Improved

POWER TRESSING MACHINE,

To Tress Butter Tubs.

Improved

POWER HEADING CUTTER,

To circle Tub Heading and larger work.

☞ **Send for Illustrated Circular.**

PATENTED

BARREL HEATERS,

To heat Tubs, Kegs, Half Barrels, Flour Barrels, Pork Barrels, Tierces and Cooperage of all descriptions. All heat from fire in stove goes into the drum before escaping through pipe. All our heaters are arranged with grates to burn either wood or coal. Large, deep ash pit, and broad flat hearth. Will heat work for six coopers with ease. Every cooper should have one of these improved heaters. Without exception, the best, cheapest and most economical Barrel Heaters ever known. Hundreds of coopers using them throughout the United States and Canada have sent their highest recommends.

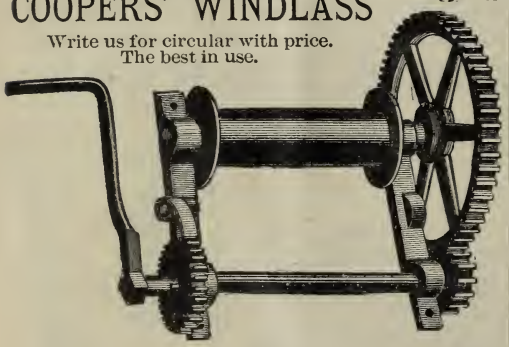
The advantages of our Heaters over those of other makes are: They are made from selected stove iron; the castings are heavy, which causes the Heaters to make excellent room or shop warmers in cold weather; they are free from the smoke nuisance; the draft is perfect; all our Heaters are adapted to tight or slack work *of any size*, from the smallest keg to large tierces; there is no burning; they are easily handled; require but little fuel; they give the best of service for a great many years.

Send for circular showing the different sizes, and very low prices.

ALL IRON-GEARED

COOPERS' WINDLASS

Write us for circular with price.
The best in use.



COOPERS' TRESS HOOPS

Size. SINGLE RIVET.	Price No. 1.
8 to 12	$2 25
12½ to 14	2 50
14½ to 16	2 75
16½ to 17½.....	3 00
18 to 19½.....	3 25
20 to 21	3 75
22 to 24	4 00
26 to 30	5 50
32 to 34	6 50
36 to 38	7 25
40 to 42	8 00
44 to 48	9 00
Upward	10 00

SINGLE TRESS HOOPS.	
From 10 to 12	$0 40
" 12½ to 15	50
" 15½ to 17½.....	60
" 18 to 21	75

All hoops cylinder rounded.
All orders from the country promptly executed.
All orders from parties not known to us, must be accompanied by the cash or no notice will be taken of them.

Our Tress Hoops we warrant to be the very best No. 1 quality, fresh manufactured. They are made of the very best second-growth hickory, by hand and not by machine. Rivets and clasps best Swedish iron. Send for our catalogue of Coopers' Tools.

Ventilating Stave Jointer.

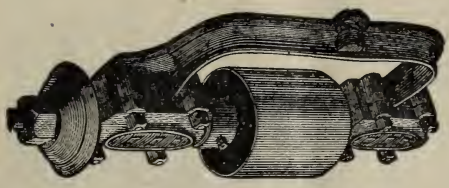
Every Cooper's Shop should have one of our Patent Ventilating Stave Jointers. It is the most convenient machine ever known to cut a curved ventilating edge at both ends of stave at same stroke of knives, and on both sides of the stave.

Write for descriptive circular showing cut of the machine and price.

IF YOU NEED A

HOOP BENDER,

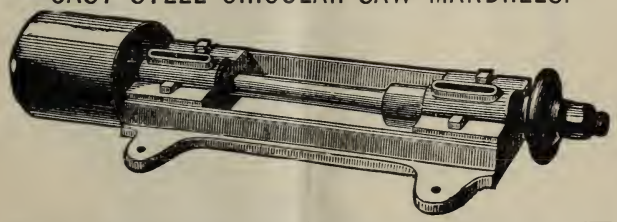
write us for circular showing cut and price. Cooper's Shops should have one of these machines to bend ash or pole shaved hoops for barrels.



CIRCULAR SAWS.

Diameter.	Thickness.	Size Mandrel Hole.	Price Each.	Extra for each additional gauge, net.	Extra for Beveling per gauge, net.
4 inch	19 gauge.	¾	$0 85	$0 03	$0 18
5 "	19 "	¾	1 00	04	20
6 "	18 "	¾	1 20	05	25
7 "	18 "	¾	1 40	06	30
8 "	18 "	⅞	1 70	08	35
9 "	17 "	⅞	2 00	10	40
10 "	16 "	1	2 50	13	45
12 "	15 "	1	3 25	17	50
14 "	15 "	1⅛	4 00	21	60
16 "	14 "	1⅛	5 00	25	70
18 "	13 "	1¼	6 00	30	80
20 "	13 "	1 5-16	7 50	35	90
22 "	12 "	1 5-16	9 00	45	1 00
24 "	11 "	1⅜	10 50	55	1 20
26 "	11 "	1⅜	12 50	65	1 40
28 "	10 "	1½	14 00	80	1 60
30 "	10 "	1½	16 00	90	1 80
32 "	10 "	1⅝	18 50	1 00	2 00
34 "	9 "	1⅝	21 00	1 20	2 20
36 "	9 "	1⅝	24 00	1 40	2 40
38 "	8 "	1¾	28 00	1 75	2 60
40 "	8 "	2	33 00	2 00	3 00
42 "	8 "	2	40 00	2 50	3 50
44 "	7 "	2	50 00	3 00	3 70
46 "	7 "	2	60 00	3 50	3 80
48 "	7 "	2	70 00	4 00	4 00
50 "	7 "	2	80 00	4 50	4 20
52 "	6 "	2	90 00	5 00	4 30
54 "	6 "	2	100 00	6 60	4 50
56 "	6 "	2	115 00	7 00	4 70
58 "	6 "	2	135 00	8 00	4 80
60 "	5 "	2	160 00	9 00	5 00
62 "	5 "	2	185 00	10 00	5 20
64 "	5 "	2	210 00	12 00	5 40
66 "	5 "	2	235 00	15 00	5 50
68 "	5 "	2	260 00	18 00	5 70
70 "	4 "	2	295 00	21 00	5 90
72 "	4 "	2	335 00	24 00	6 00
74 "	4 "	2	420 00	28 00	6 25

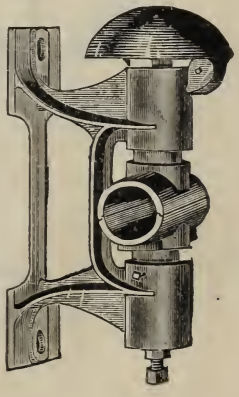
CAST STEEL CIRCULAR SAW MANDRELS.



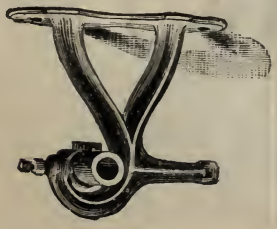
No.	Hole in Saw.	Size of Mandrel.	Length of Frame.	Diam. of Collars.	Pulley. Diameter.	Pulley. Face.	C. to C. of Bolt Holes.	Price.
1	¾	13-16	13¾	2½	3	3¾	10¾	$9 60
2	1	1 1-16	15¾	3	4	4½	12½	11 20
3	1⅛	1 3-16	18½	3½	5	5½	15	12 80
4	1¼	1 5-16	18½	4	6	6½	15	14 40
5	1⅜	1 7-16	19½	4½	7	7½	15¾	16 00
6	1½	1 9-16	19½	5	8	8½	15¾	17 60

POST HANGERS.

With Adjustable Ball and Socket Boxes.
Six inches to center of Boxes.



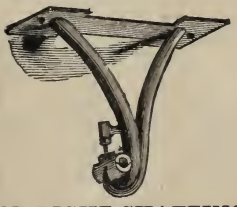
Counter Shaft Hangers.



Floor Stands.

For running counter-shafts or lines resting on the floor. With pivot self-oiling boxes.

Rigid Drop Hangers.



FOR LIGHT SHAFTING.

PRICE LIST OF TURNED SHAFTING.

THE BEST, STRONGEST AND FINEST FINISHED SHAFTING IN USE.

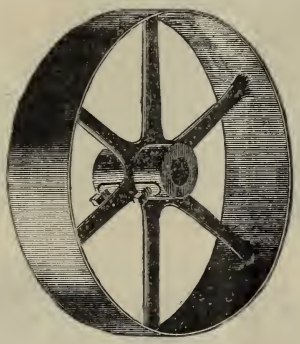
Cutting to other than standard lengths and key seating, extra; but charges will be reasonable in all cases.

Standard lengths of shafting are 10, 12, 14, 16, 18 and 20 feet lengths; commencing at 1 7-16 diameter, can furnish in 20 feet lengths if desired.

Diameter.	Price per Foot.	Diameter.	Price per Foot.
1	$0 35	1 15/16	$0 86
1 3/16	46	2	96
1 1/4	50	2 3/16	1 06
1 3/8	53	2 1/4	1 18
1 7/16	55	2 3/8	1 25
1 1/2	60	2 7/16	1 30
1 5/8	65	2 1/2	1 40
1 11/16	70	2 11/16	1 55
1 3/4	80		

PRICE LIST OF PULLEYS.

BORED, TURNED, BALANCED, SET-SCREWED AND PAINTED.



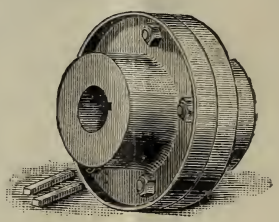
DIAM.	2 in. face.	3	4	5	6	7	8	9	10
4	$1 50	$1 75	$2 00	$2 25	$2 50	.....	.....	.....	.....
5	1 75	2 00	2 25	2 50	2 75	3 00	3 25	.....	.....
6	1 85	2 15	2 35	2 55	2 80	3 00	3 25	.....	.....
7	2 00	2 25	2 50	2 75	3 00	3 25	3 50	.....	.....
8	2 25	2 50	2 75	3 00	3 25	3 50	3 75	4 00	4 25
9	2 35	2 55	2 75	3 00	3 25	3 50	3 75	4 00	4 25
10	2 50	2 75	3 00	3 25	3 50	3 75	4 00	4 25	4 75
11	2 60	2 85	3 10	3 30	3 60	3 90	4 25	4 50	5 00
12	2 75	3 00	3 25	3 50	4 00	4 25	4 60	5 00	5 50
13	3 00	3 25	3 50	3 75	4 10	4 50	5 00	5 30	5 75
14	3 10	3 35	3 65	4 00	4 25	4 75	5 25	5 75	6 25
15	3 25	3 45	3 80	4 20	4 55	5 00	5 65	6 10	6 70
16	3 50	3 75	4 10	4 40	4 85	5 45	6 00	6 50	7 25
17	3 65	3 90	4 30	4 75	5 20	5 75	6 35	6 85	7 80
18	3 75	4 00	4 45	4 85	5 50	6 00	6 65	7 25	7 90
19	4 00	4 30	5 00	5 40	6 25	6 75	7 25	7 75	8 50
20	4 25	4 50	5 25	5 75	6 50	7 00	7 50	8 00	8 75
21	4 50	4 75	5 50	6 00	6 75	7 50	8 25	9 00	9 75
22	4 75	5 00	5 75	6 25	7 00	7 75	8 50	9 75	10 50
23	5 00	5 25	5 85	6 50	7 25	8 00	9 00	9 75	10 50
24	5 25	5 50	6 00	6 75	7 50	8 00	9 50	10 25	11 00
25	5 50	6 00	6 50	7 00	7 75	8 50	9 75	11 00	11 75
26	6 00	6 50	7 00	7 50	8 25	9 00	10 00	11 50	12 50
27	6 50	7 00	7 50	8 00	9 00	10 00	11 00	12 00	13 50
28	7 00	7 50	8 00	8 50	9 50	10 50	11 50	12 50	14 25
29	8 00	8 50	9 00	9 75	11 00	11 75	12 75	13 75	14 75
30	8 50	9 00	9 50	10 50	11 50	12 50	13 50	14 50	15 50
32	.....	.....	10 50	11 25	12 25	13 37	14 50	15 50	16 50
34	.....	.....	11 25	12 00	13 00	14 75	15 50	16 75	18 00
36	.....	.....	12 00	12 75	13 75	15 00	16 25	17 62	19 00
38	.....	.....	12 75	14 12	15 50	16 88	18 25	19 88	21 50
40	.....	.....	15 00	16 25	17 00	18 13	19 25	20 88	22 50
42	.....	.....	15 75	16 75	18 00	19 50	21 00	22 75	24 50
44	.....	.....	16 25	17 00	19 00	21 00	22 25	24 50	26 50
46	.....	.....	17 25	18 25	20 00	21 75	23 25	26 75	28 00
48	.....	.....	18 25	19 00	21 00	23 00	24 75	27 50	30 00

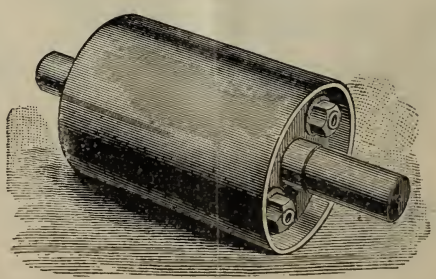
Price List of Flange and Compression Couplings.

Diameter.	Price.	Diameter.	Price.
1 3/16	$5 50	1 15/16	$8 00
1 3/8	5 75	2 3/16	9 00
1 7/16	6 00	2 3/8	9 75
1 5/8	6 50	2 7/16	10 00
1 11/16	7 00		
1 3/4	7 50		

Flanged or Faced Couplings same price as above.

Clutch and other styles of Couplings made to order.

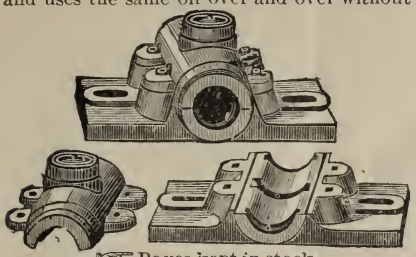




RIGID SELF-OILING JOURNAL BOXES.

This Journal Box supplies the oil from the cellar underneath the bearing, through a waste or hemp-packing medium placed in the middle of a large chamber. The journal virtually runs in oil the same as a car axle, and uses the same oil over and over without wasting a drop, thereby forming a most reliable and trustworthy self-oiler, and dispensing with that annoyance of oil-dropping from every journal. The large cellar in the center of the bearing is furnished with a hemp-packing medium, and all that is required is to put a few drops on the journal to start with and then fill the chambers full with the best refined petroleum engine oil to secure a perfect self-lubricator.

The oil drips from the shaft into the end chamber and is carried back to the center chamber again by passage ways underneath the babbit seat.



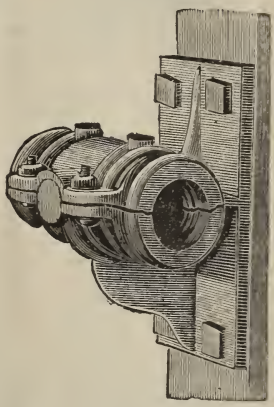
☞ Boxes kept in stock.

Price List.

Diameter.....	1 3-16	1 7-16	1 11-16	1 15-16	2 3-16	2 7-16
Price per box	$1 50	1 75	2 75	3 25	3 75	4 75

RIGID

Self-Oiling Post Boxes.

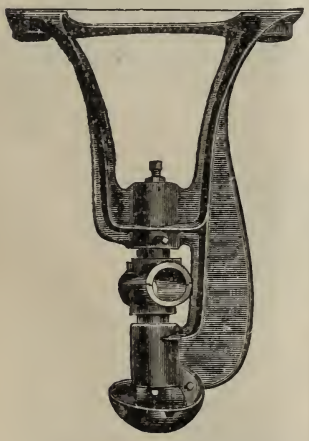


These Post Boxes are provided with the same self-oiling arrangement as above described.

☞ Correspondence solicited.

Price List.

Diameter	1 3-16	1 7-16	1 11-16	1 15-16	2 3-16	2 7-16
Per box	$2 00	2 25	3 25	4 25	4 75	5 75



Adjustable Ball and Socket Hangers.

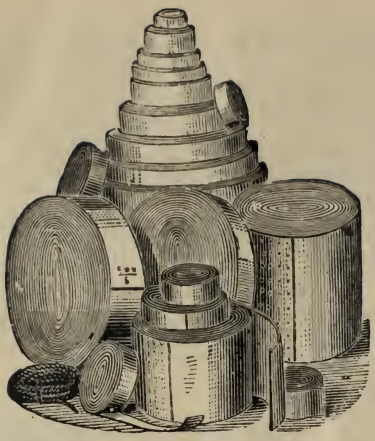
Below we present you a cut of our Ball and Socket Hangers, which for lightness, proper distribution of metal, beauty of design, and convenience in putting up the shaft after the Hanger is in place, will, we think, please the most particular.

Size — Inches.	Drop — Inches,	Price.
1 7-16	10	$4 00
1 7-16	12	4 50
1 7-16	14	5 00
1 11-17	10	4 75
1 11-16	12	5 25
1 11-16	14	5 75
1 15-16	12	6 25
1 15-16	14	6 75
1 15-16	16	7 25
1 15-16	18	7 75
2 3-16	12	7 50
2 3-16	14	8 00
2 3-16	16	8 50
2 3-16	18	9 00
2 3-16	20	9 50

Shafting Collars.

Faced, Bored to Standard Sizes and Set-Screwed.

Diameter of Bore.	Price.	Diameter of Bore.	Price.
1	$0 70	1 11-16	$1 20
1 1-8	75	1 3-4	1 25
1 3-16	80	1 15-16	1 40
1 1-4	90	2 3-16	1 60
1 3-8	95	2 3-8	1 70
1 7-16	1 00	2 7-16	1 80
1 1-2	1 10		
1 5-8	1 15		



Leather and Rubber Belting.

Price List of Pure White Oak Tanned Leather Belting.

PER RUNNING FOOT.

1	inch	$0 09	11	inch	$1 29	48	inch	$7 10
1¼	"	12	12	"	1 41			
1½	"	15	13	"	1 53		SOLID.	
1¾	"	18	14	"	1 65			
2	"	21	15	"	1 80	⅛	inch	$0 05
2¼	"	24	16	"	1 94	3-16	"	07
2½	"	27	17	"	2 10	¼	"	10
2¾	"	30	18	"	2 26	5-16	"	14
3	"	33	19	"	2 42	⅜	"	18
3¼	"	36	20	"	2 58		TWIST.	
3½	"	39	21	"	2 74			
3¾	"	42	22	"	2 90	⅛	inch	$0 05
4	"	45	24	"	3 22	3-16	"	09
4½	"	51	26	"	3 56	¼	"	12
5	"	57	28	"	3 90	5-16	"	16
5½	"	63	30	"	4 22	⅜	"	20
6	"	69	32	"	4 54	½	"	25
7	"	81	34	"	4 86	⅝	"	30
8	"	93	36	"	5 18	¾	"	38
9	"	1 05	40	"	5 82	⅞	"	45
10	"	1 17	44	"	6 46	1	"	53

Double Belts, double price of single. Every Belt warranted.

RUBBER BELTING.

Patent Smooth Metallic Surface. Unaffected by Heat, Cold or Moisture.

Prices per Running Foot.

THREE-PLY.

2	inch	$0 17	7	inch	$0 60	15	inch	$1 38
2¾	"	22	8	"	70	16	"	1 50
3	"	26	9	"	80	18	"	1 70
3½	"	30	10	"	90	20	"	1 90
4	"	34	11	"	1 00	22	"	2 12
4½	"	39	12	"	1 08	24	"	2 36
5	"	43	13	"	1 18	26	"	2 60
6	"	52	14	"	1 28	28	"	2 84

FOUR-PLY.

2	inch	$0 21	11	inch	$1 18	28	inch	$3 36
2½	"	26	12	"	1 30	30	"	3 64
3	"	31	13	"	1 42	32	"	3 92
3½	"	37	14	"	1 54	34	"	4 20
4	"	42	15	"	1 66	36	"	4 48
4½	"	47	16	"	1 78	38	"	4 76
5	"	52	18	"	2 02	40	"	5 04
6	"	62	20	"	2 26	42	"	5 32
7	"	73	22	"	2 52	44	"	5 60
8	"	84	24	"	2 80	46	"	5 88
9	"	95	26	"	3 08	48	"	6 16
10	"	1 07						

LACE LEATHER.

Our Lace Leather is made from the best city slaughtered Calcutta Hides, and WARRANTED IN EVERY RESPECT best quality or no sale, and can furnish it as low to the trade as you can buy it east or elsewhere.

Uncut Hides, from $1.50 to $2.50 each, according to size.

LIST OF PRICES OF CUT LACING.

¼	inch	per 100 feet,	$1 00
⅜	"	" "	1 50
½	"	" "	2 00
⅝	"	" "	2 75
¾	"	" "	3 25

SPECIAL NOTICE.

VERY LOW PRICES.

By comparison you will find our lists the lowest priced of any in the country.

On Shafting, Pulleys, Hangers, Boxes, etc., our list prices are considerable below most other manufacturers. Our goods are unusually strong and finely finished.

We are now prepared to give all cash customers the lowest prices yet granted for the following goods. In fact these large discounts put the goods into your hands at prices near the **COST OF MANUFACTURE**. The expense of shipping by freight for this class of goods is always very low in any direction or for any distance.

The Cash, either by express, money order, or by draft, must accompany all orders for these goods at the following discounts.

Shafting, Hangers, Boxes, Pulleys, Collars, Couplings,

Also CIRCULAR SAWS, BEST LEATHER BELTING, and BEST RUBBER BELTING.

33⅓ PER CENT FROM LIST PRICES.

ALL ORDERS PROMPTLY FILLED.

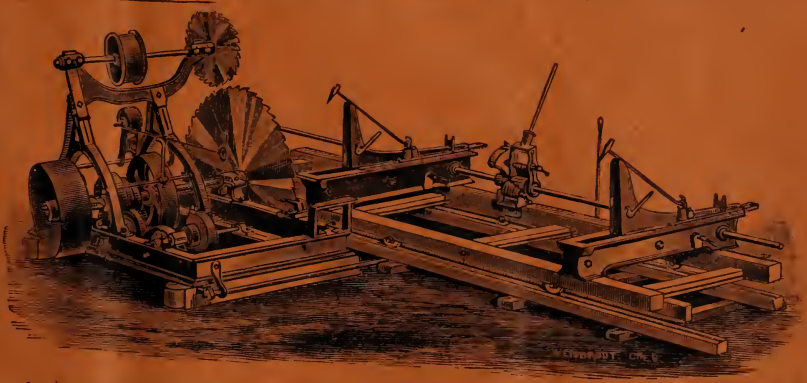
PATENT HEAD CUTTERS,

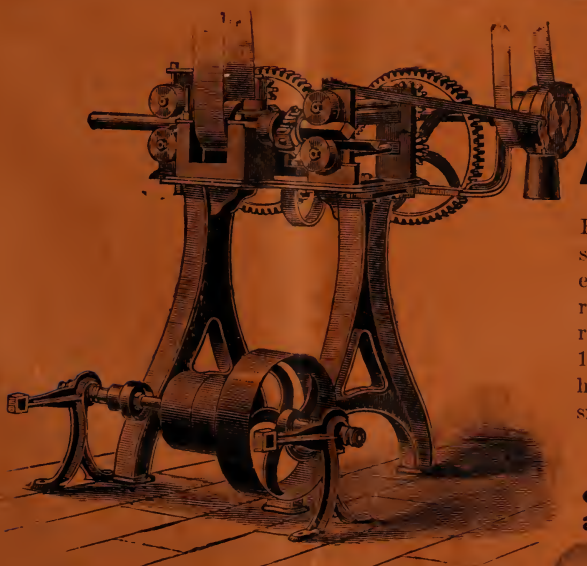
For Circling any kind of Keg, Tub or Barrel Heading.

Every Tub, Keg and Barrel Factory should have one of these Machines. No Cooper Shop or Stave and Heading Works is complete without one.

SAW MILLS

Single & Double
With Improved
Head Blocks
AND
Set Works,
At prices from
$250 upward.





IMPROVED ROD AND DOWEL MACHINE

IMPROVED ROD AND *Dowel Machine*

For turning round articles of uniform size from end to end, such as chair stretchers, rods, dowels, ladder rounds, curtain rollers, poles, etc. It works with great rapidity, being capable of turning from 1,000 to 2,500 lineal feet of wood per hour, varying with the kind of wood and size of article.

Send for descriptive circulars of above Machines and Saw Mills.

Address,

WINNIE MACHINE WORKS,

Wabash Ave. and Congress St., CHICAGO, ILL.

WINNIE MACHINE WORKS,

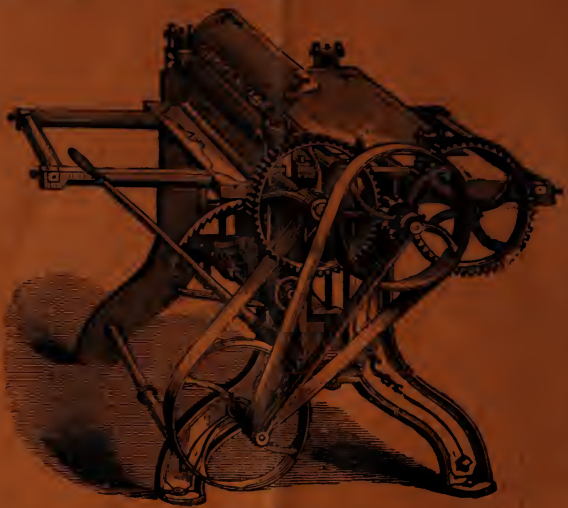
Wabash Ave. and Congress St., CHICAGO, ILL.

Portable and Stationary

Engines and Boilers,

New and Second-hand,

ALL SIZES.



Champion Pony Planer.

IMPROVED CYLINDER STAVE SAWS.

All Sizes, 12 to 24 inches diameter and 20 to 46 inches long, for sawing all sizes and kinds of Tub, Pail, Churn, Pickle, Beer, Wine, Whiskey, Glucose, Syrup, Oil, Lard and Pork Barrel Staves.

If you wish to purchase write for descriptive circular.

WINNIE MACHINE WORKS,

Wabash Ave. and Congress St., CHICAGO, ILL.